CLAIMS

1. A method of fine synchronization to a receive signal (S) corresponding to a reference signal (TS) transmitted in a transmission channel, characterized in that it includes the following steps:
- selecting a source signal producing a characterization signal (X, S) after it has passed through said transmission channel,
- establishing a characterization matrix (L) for estimating the covariance of said characterization signal (X, S),
- identifying dominant eigenvalues which are the highest eigenvalues (λ_i, λ'_i) of the characterization matrix (L),
- calculating the correlation function (c(t), f(t)) of said source signal with the sum of the eigenvectors (v_i, v'_i) associated with said dominant eigenvalues, and
- searching for the first maximum of the correlation function (c(t), f(t)).

2. A method according to claim 1, characterized in that the number (d, d') of dominant eigenvalues (λ_i, λ'_i) is predetermined.

3. A method according to claim 1, characterized in that the ratio of the sum of said dominant eigenvalues to the sum of all the eigenvalues is greater than or equal to a predetermined number.

4. A method according to claim 1, further including a step of estimating the additive noise (N) in the transmission channel, characterized in that said dominant eigenvalues are such that their sum is less than or equal to the sum of all the eigenvalues less said additive noise (N).

5. A method according to claim 4, characterized in that the additive noise (N) is estimated by normalizing the

instantaneous noise (N_0) which is evaluated by means of said receive signal (S), said reference signal (TS) and an estimate of the impulse response (X) of the transmission channel.

6. A method according to claim 5, characterized in that the expression for the instantaneous noise (N_0) is

$$N_0 = S - A.X$$

where A denotes the transmission matrix associated with said reference signal (TS).

7. A method according to claim 6, characterized in that said additive noise (N) is also averaged.

8. A method according to any of claims 1 to 7, characterized in that said characterization matrix (L) is the result of a smoothing operation.

9. A method according to any preceding claim, characterized in that said characterization signal is an estimate of the impulse response (X) of the transmission channel.

10. A method according to any of claims 1 to 8, characterized in that said characterization signal is said receive signal (S).